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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: HERVE LESCUYER et al	Group Art Unit: 1723 Examiner: K. Menon
Serial No.: 09/856,460	
Filed: August 7, 2001	

For: IMPROVED METHOD FOR FILTERING A METAL LIQUID ON A BED OF REFRACTORY PARTICULATE MATERIAL

DECLARATION UNDER 37 CFR 1.132

Honorable Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

I, Pierre Le Brun, do hereby declare as follows:

I was educated at the *Université Catholique de Louvain-la-Neuve* and received a Ph.D. degree in Metallurgy from the *Katholieke Universiteit Leuven*, both in Belgium.

Since completing my education, I have been working for 10 years at the Pechiney Research Center in Voreppe, France, in the field of metallurgy and metal casting, in particular molten metal treatment and filtration.

I am familiar with patents by virtue of my being a named inventor on 5 basic patents, including one U.S. patent, No. 6,060,013, and by working on numerous patents with the Pechiney Patent Department in Lyon, France.

I am familiar with the above-identified patent application, and with the Office Actions mailed on October 23, 2002, and March 28, 2003.

I have reviewed U.S. Patent No. 4,690,763 to Rieger et al, which discloses a filter plate for filtering molten metal in the form of a porous body made of hollow spherical ceramic granules bonded together. The grains have a mean diameter of from 0.1 mm to 30 mm; the porosity of the plate is between 5 and 45% by volume.

I have reviewed the statement in the Office Action of March 28, 2003 that since Rieger et al disclose a filter bed with an overall density of 25%, and since the space between the particles is 45%, then the remaining porosity (75%-45%) of 30% is porosity within the particles. I disagree with this conclusion.

A typical filter bed has a theoretical density of x grams/y ml, or x/y grams/ml. According to Rieger et al, the apparent or actual density is 25% of theoretical, so the weight of the particles in the bed is 0.25x.

However, the space between the particles makes up 45 vol.% of the bed, so the actual volume of the particles is (100%-45%) or 0.55y. If one does a density calculation for just the particles, the density is actually 0.25x g/0.55y ml, or 0.4545(x/y) g/ml, which is 45.45% of theoretical density.

Hence, the volume of empty space within the particles must be (100%-45.45%) or 54.55%.

Thus, the total porosity of the bed is 75% = 45% [between the granules] + (0.5455 x 55%) [within the granules]. A diagram is attached to this declaration showing the distribution of porosity between the granules and within the granules.

The calculated porosity of 54.55% within the granules is substantially higher than the presently claimed range of 5-30% for *open* porosity.

Moreover, I believe that the porosity of the plate *intended for filtration* by Rieger et al is clearly that of the space between the granules. My opinion is based on the statement in Rieger et al that "[t]he porosity serves to express how large are the spaces which can be flowed through, between the spheres, reckoned on the total volume of the body" (col. 2, lines 40-42). Rieger et al admits that it is acceptable to use broken shells of some grains ("porosities or point fracture in the shell"; col. 2, lines 67-68), but still defines the spaces which create the porosity as "only the space delimited by the exterior curves of the grains without possible cavities in the interiors of the grains" (col 2, lines 43-45). I therefore believe that this inner space is normally not accessible to the liquid metal for filtration and

does not significantly enhance the open porosity of the plate.

Since Rieger et al clearly states that solid or hollow particles may be used interchangeably (col. 5, lines 14-19), I believe that they do not specifically teach the use of hollow spheres to improve filtration properties. It is my opinion that Rieger et al mainly teach reducing the weight of the plate and improving its strength and in that respect, Rieger et al states that the use of hollow particles reduces the weight of the filter plate (col. 6, lines 23-34). However, Rieger et al does not disclose or suggest utilizing the inner porosity of the particles to improve the filtration of the metal.

I further declare that all statements made by me herein are true and all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and may jeopardize the validity of the application or any patent issued thereon.

Date

July 10th 2003

Pierre LE BRUN

Pierre Le Brun

45 %

0,545 x 55 % = 30 %